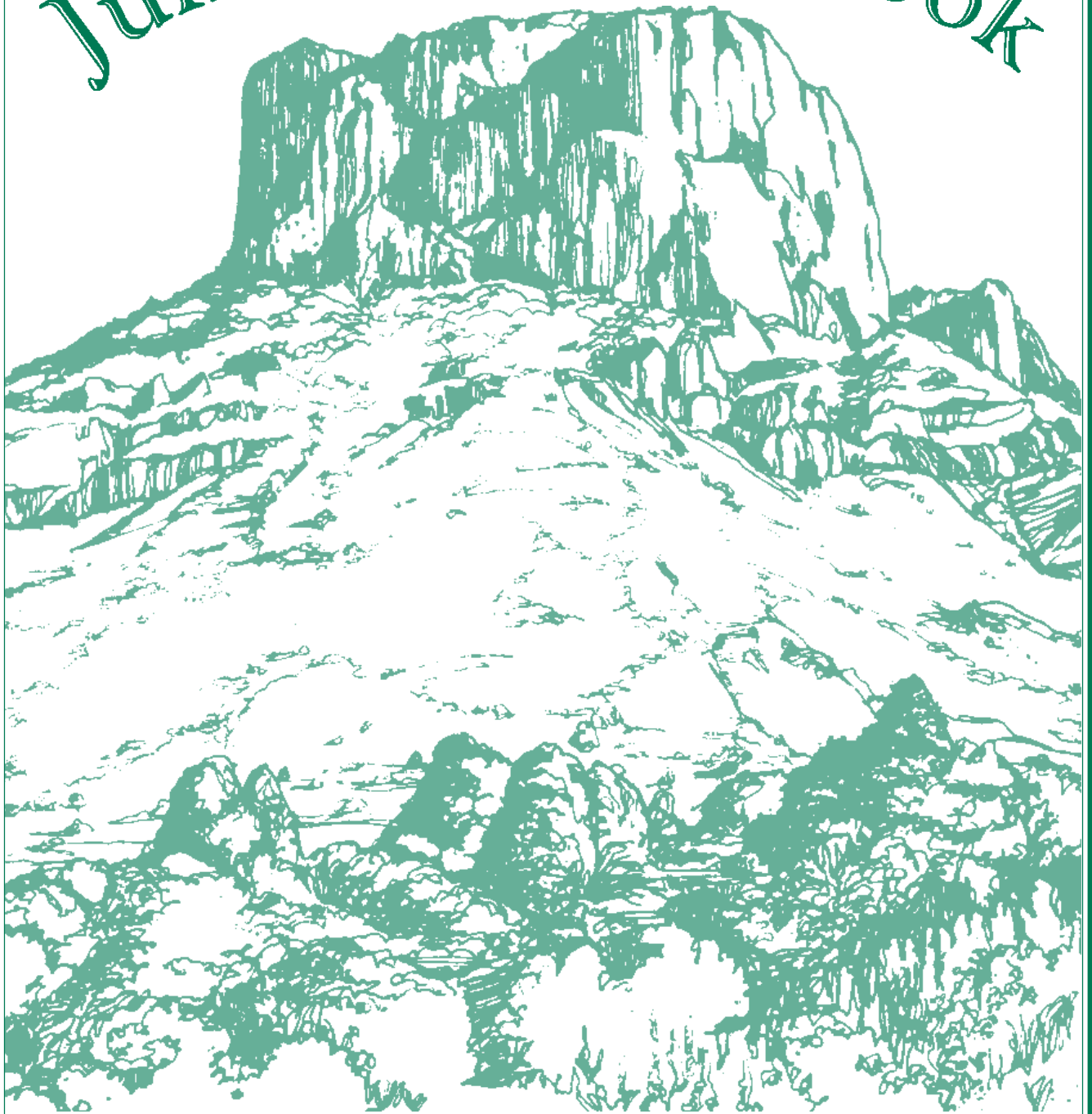


Junior Ranger Book



Big Bend National Park

Welcome to the Big Bend National Park Junior Ranger Program!

Junior Rangers are special and important people. They help park rangers protect plants, animals, rocks, and historic sites. They pick up litter and put it in trash cans; they step on rocks, bare ground, and trails when hiking so they do not crush plants. Junior Rangers know that national parks like Big Bend are special places that need to be protected so they will be just as special in the future.

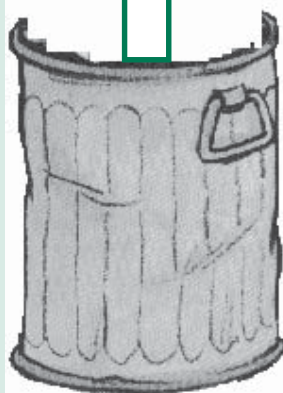
You can become a Junior Ranger! Just find your age and do the number of activities listed below. Ask your family and friends to help, too. If you get stuck, you can take a peek at the answers on page 15 (but don't cheat!).

When you have completed your activities, take your book to any visitor center. There, a park ranger will check your answers and give you a Junior Ranger award. Good Luck!

UNDER AGE 7	AGES 7 to 11	AGES 12 and OVER
Naturalist's Notebook (page 14)	Naturalist's Notebook (page 14)	Naturalist's Notebook (page 14)
Complete pages 4, 5, and 11	Complete pages 4, 5, 7, 9 and 11	Complete pages 4 thru 14
Complete one "Take a Closer Look" activity from page 16	Complete two "Take a Closer Look" activities from page 16	Complete three "Take a Closer Look" activities from page 16

If you are unable to complete the Junior Ranger program while you are here, please mail your completed activity book to: Division of Interpretation, Junior Ranger Program, P.O. Box 129, Big Bend National Park, Texas 79834.

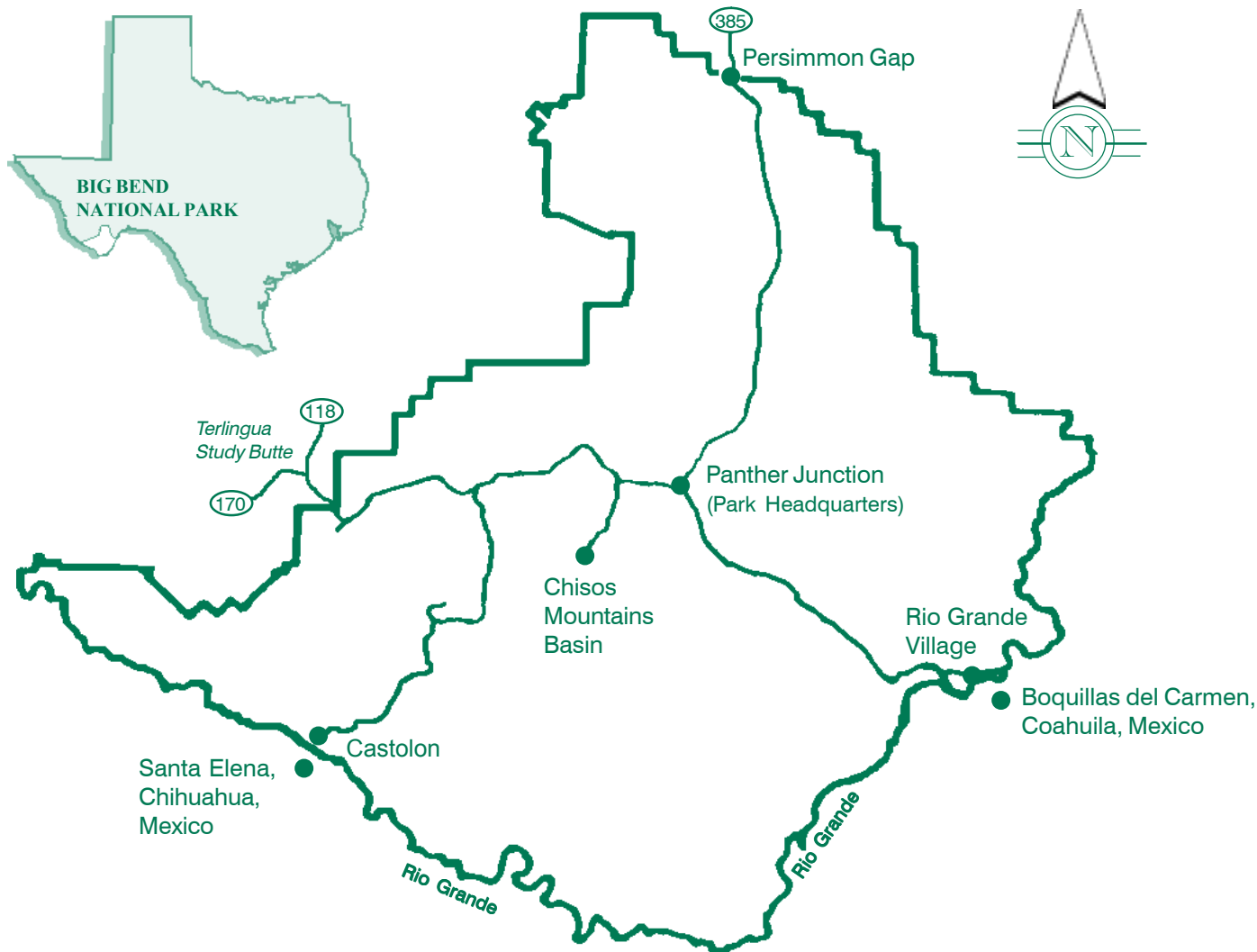
LITTER KNOWN FACTS



Lots of people just like you visit Big Bend National Park. In fact, over 300,000 visitors come here each year. Now that's a lot of people! And, of course, most visitors have to bring along food and supplies for their trip. During their visit, almost everyone throws away some kind of garbage. Fortunately, most people put trash where it belongs—in a garbage can. But, a few careless people leave trash along roads and trails and in campsites. It can take this trash YEARS to decompose (that means to rot away). This is how long it takes some trash to decompose:

Paper	2 to 5 months	Nylon Cloth	30 to 40 years
Orange Peels	6 months	Plastic Container	50 to 80 years
Milk Carton	5 years	Aluminum	90 to 100 years
Plastic Bags	10 to 20 years	Plastic Foam	Over 100 years.
Leather Shoes	25 to 40 years		

That means that if you threw out an aluminum can today, you would be over 100 years old before it disappeared. Please do all that you can to save resources and keep the park clean. You can make a difference! Recycle, Reduce, Reuse. ♻️



What's so special about this place?

Well, for starters, Big Bend is BIG! Did you know that the park is 801,163 acres? That is bigger than the state of Rhode Island. It is definitely the BIGGEST national park in Texas and one of the BIGGEST in the United States. Big Bend is also the LARGEST protected area in the *Chihuahuan* Desert (pronounced chee-WHA-wan). Most of the Chihuahuan Desert is in Mexico, but it also stretches into portions of West Texas and southern New Mexico.

So what's so special about the Chihuahuan Desert? It's one of the four deserts of North America. The Chihuahuan is the youngest, highest, and wettest of the North American Deserts. Can you name the other three deserts of North America? *

Big Bend has more species of birds, bats, and cacti than any other U.S. national park. The park has a lot of geological diversity (neat rocks, that is!) and interesting stories of the people who lived here.

When you complete this Junior Ranger book, you'll know a lot about Big Bend National Park and why it is such a special place. Have fun becoming a "Big Bend expert".

** Answer: Sonoran, Mojave, and Great Basin.*



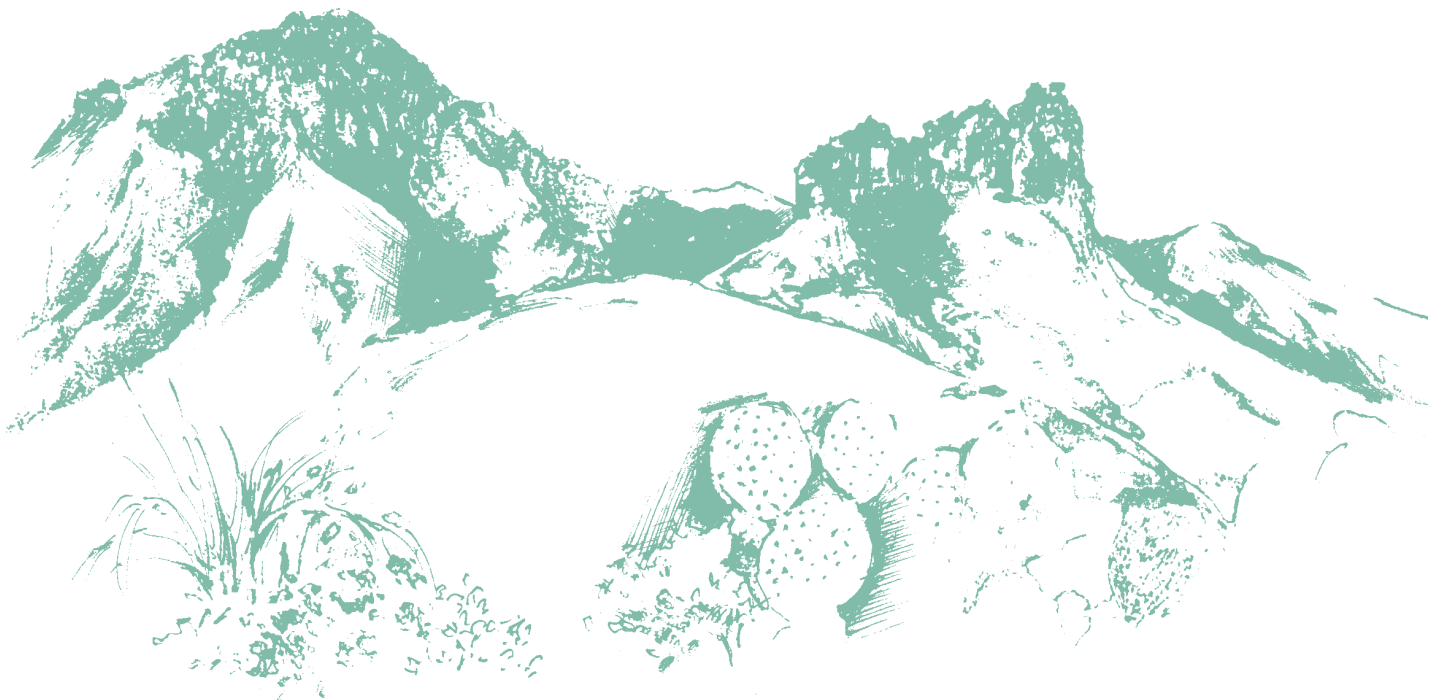
DYNAMIC DESERTS AND AMAZING ADAPTATIONS!

What do you think of when you hear the word "desert"? Many people picture the bright, hot sun beating down on a sea of sand, a few spiny cactuses, and lizards sunning themselves. Some people even think that deserts are empty and lifeless. But that's certainly not true of the Chihuahuan Desert. Big Bend National Park is home to an incredible variety of lifeforms.

A desert is defined as an area that receives less than ten inches of rain per year. More important than rainfall, however, is how fast the rain and other moisture evaporates. High temperatures, low humidity, and drying winds cause rain to evaporate quickly in the desert. All of these conditions are found in the four deserts of the United States. Do you remember the names of the three other U.S. deserts? Take a look at page 3 if you forgot.

Living in the desert is challenging. Most of the plants and animals here have developed special adaptations to the desert's lack of water, extreme temperatures, strong winds, and lack of hiding places. Can you name three adaptations that are used by plants and animals to live in the desert?

Draw in some of the plants and animals that have adapted to living in the Chihuahuan Desert on the picture below:

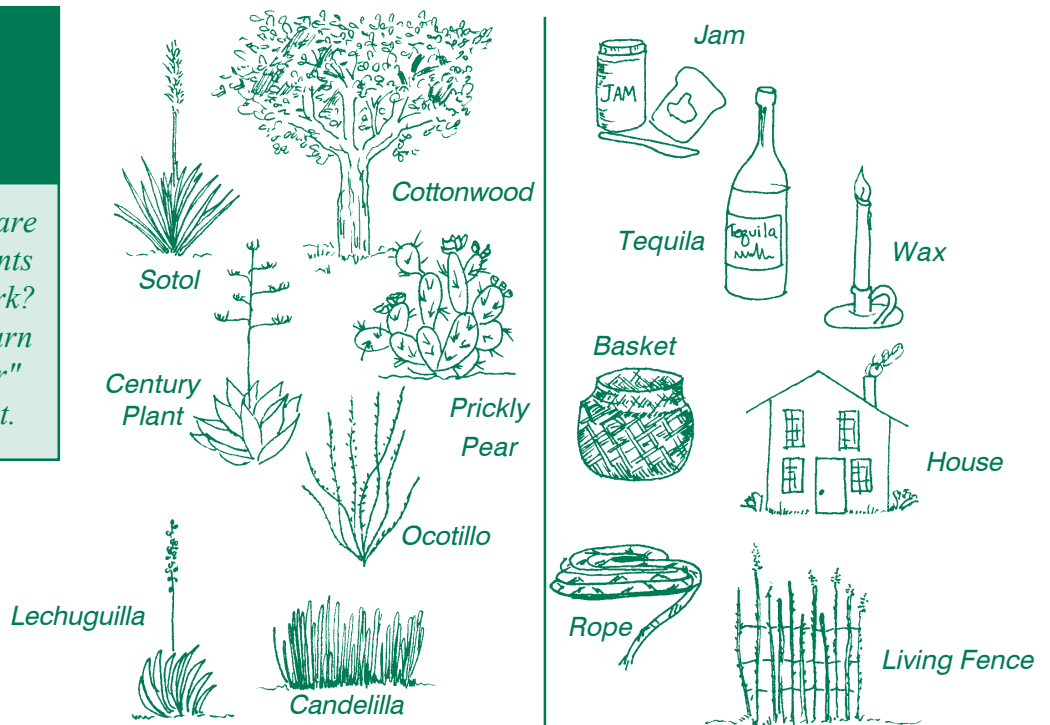


PLANT POWER!

Did you know that there are over 1,200 species of plants in Big Bend National Park? Complete this page to learn more about "Plant Power" in the Chihuahuan Desert.

USEFUL PLANTS

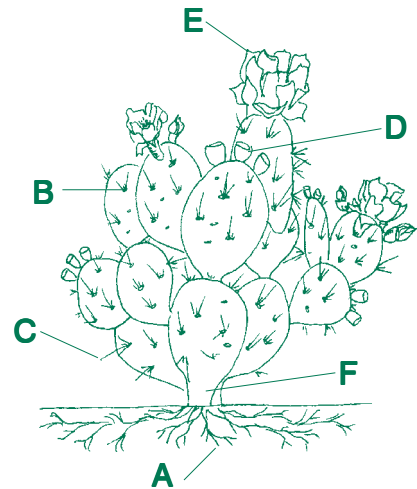
Many of the plants of the Chihuahuan Desert are used by people. Can you match each plant with the product that is made from it?



PRICKLY PEAR PARTS

Complete the rhymes to identify the parts of a prickly pear cactus.

- A. These are spread like a web through underground chutes, collecting water and food a plant would die without ____.
- B. These spots on a cactus are where you would find the flowers growing from and also the spines. All cacti have these, they're round like a bowl. This part of the cactus is called the ____.
- C. These often look like needles and feel like them too, they can stick in your hand or stick in your shoe. They keep the plant cool by creating shadowy lines, they are very helpful, you see, these things called ____.
- D. This part of the plant comes out after the flower, it's not poisonous but could be sweet or sour. This part of the plant is not called the root, it contains many small seeds we call it the ____.
- E. Cacti may bloom after spring rain showers providing food for the bees with their beautiful ____.
- F. These could be shaped like a column or be very tall. They could be very tiny or shaped like a ball. Storing water is an important function of them, this part of the cactus is called the ____.



WORDS TO CHOOSE FROM:

areole
flowers
fruit
roots
spines
stem

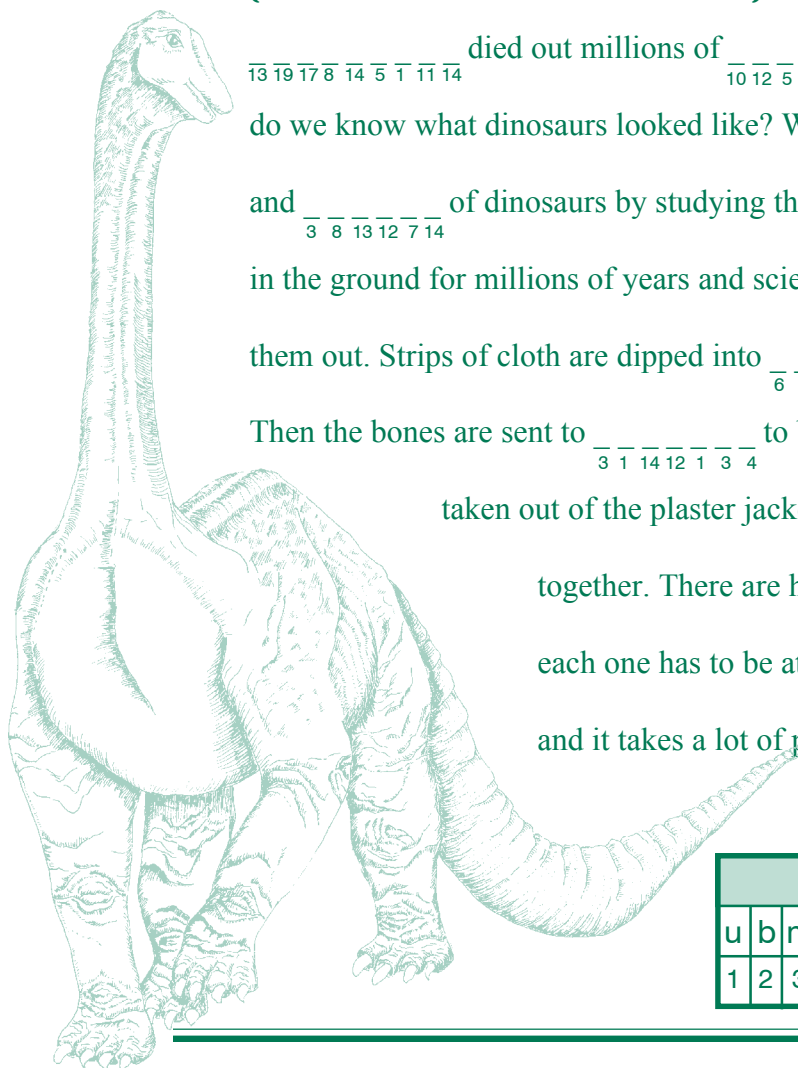
"DIGGING" DINOSAURS!

Fun fact

The pterosaur, one of the most famous "dinosaurs," wasn't a dinosaur at all! It was a HUGE flying reptile. Scientists say that there was no such thing as a flying dinosaur!



Use the **SECRET CODE** to find out how paleontologists (scientists who study fossils) learn about dinosaurs!



died out millions of _____ ago and no person ever saw one. So, how
 do we know what dinosaurs looked like? Well, _____ can make pictures
 and _____ of dinosaurs by studying their _____. Dinosaur bones have been lying
 in the ground for millions of years and scientists must be very careful when digging
 them out. Strips of cloth are dipped into _____ and wrapped around each bone.
 Then the bones are sent to _____ to be studied. At the museum, the bones are
 taken out of the plaster jackets. _____ bones must be glued back
 together. There are hundreds of bones in a _____ and
 each one has to be attached in the right place. This is a big job
 and it takes a lot of patience and _____.

SECRET CODE

u	b	m	g	a	p	l	o	c	y	r	e	d	s	t	f	n	h	i	k
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

TAKE A WALK ON THE



Big Bend is a great place to see wildlife. Whether you explore the park on foot or in a car, you are likely to see one of the 450 species of birds, 78 species of mammals, 66 species of amphibians and reptiles, 42 species of fish, or any one of the tons insects that call Big Bend home. Look for their nests, burrows, dens, tracks and scat, or listen for their calls. But remember that you are a visitor to their home. Respect the wildlife and their habitat.



***That's
Amazing!***

Most of the wildlife that live in the Chihuahuan Desert have special adaptations to make life easier. Can you match the amazing fact with the correct animal?

1. ____ peregrine falcon

2. ____ kangaroo rat

3. ____ roadrunner

4. ____ jackrabbit

5. ____ red racer

6. ____ black bear

7. ____ javelina

8. ____ millipede

9. ____ tarantula

10. ____ Big Bend
mosquito fish

11. ____ coyote

a.) Usually seen after a rain, people sometimes call this creature a "rain worm". Its name means a "thousand feet".

b.) This animal cools off through its big, long ears.

c.) An endangered species living in Big Bend, it has been clocked at speeds of 200 mph when diving for prey.

d.) This small, bouncy rodent never has to take a drink of water. It obtains moisture from the food it eats.

e.) In nature, this endangered species is found in only one pond in the whole world.

f.) Although this animal can fly, it prefers to run and has been clocked at speeds up to 20 mph.

g.) This bright pink snake is not poisonous and is known for its speed.

h.) Not a pig, the collared peccary is a cousin to wild pigs and hippos.

i.) Also called a bird spider, this large hairy spider is gentle towards humans unless provoked.

j.) This wily predator of the desert preys on jackrabbits and roadrunners.

k.) This large, furry mammal lives mostly in the Chisos Mountains and likes to eat prickly pear fruits and pinyon pine nuts.

Fun fact

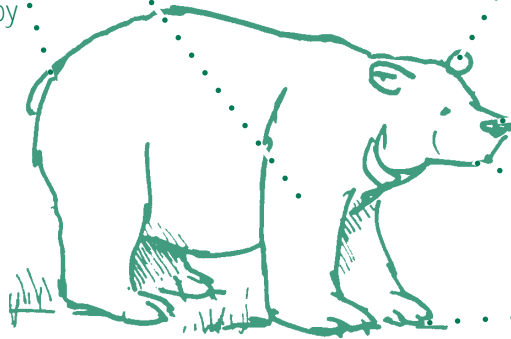
big bend is home to nineteen species of bats. That's more bat species than in any other national park in the u.s. big bend's bats live in caves, trees, bridges, and old mine shafts.

WHAT BEARS ARE LIKE:

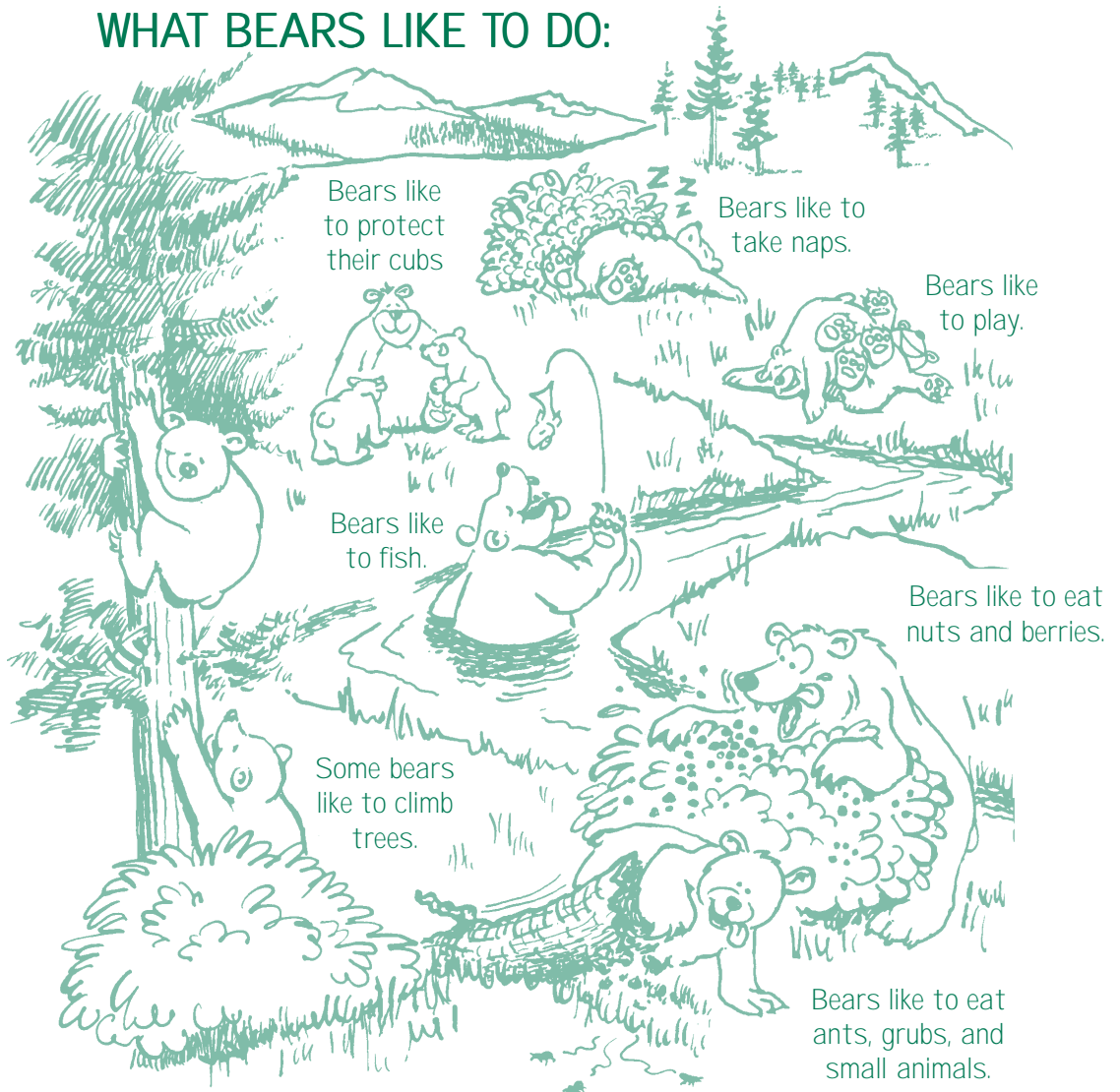
1. Bears have powerful _____.
Some bears can run as fast as a _____.
2. Bears have short, stubby _____.
3. Bears have small _____, but their hearing is very good.
4. Bears have a keen sense of _____.
Their _____ are very sensitive.
5. Bears have strong jaws and sharp _____.
6. Bears have long, sharp _____, which are good for _____ and scratching.

Use these words to fill in the blanks:

claws	noses	ears
teeth	tails	legs
digging	smell	horse



WHAT BEARS LIKE TO DO:



Many early settlers in Big Bend raised livestock. They put up fences, cut trees, and made other changes to the land that bears didn't like, so bears left the Chisos Mountains to find new homes. Settlers sometimes killed bears to protect their livestock. By the 1940s, there were no bears in Big Bend.

Even though bears didn't live in Big Bend for many years, they still lived in mountains just south of here, in Mexico. As their population increased, adventurous bears set out to find new places to live. In the late 1980s, bears moved back into the Chisos Mountains where they found the water, shelter, food and protection they needed to survive. Today there are about 20 black bears living in Big Bend National Park.

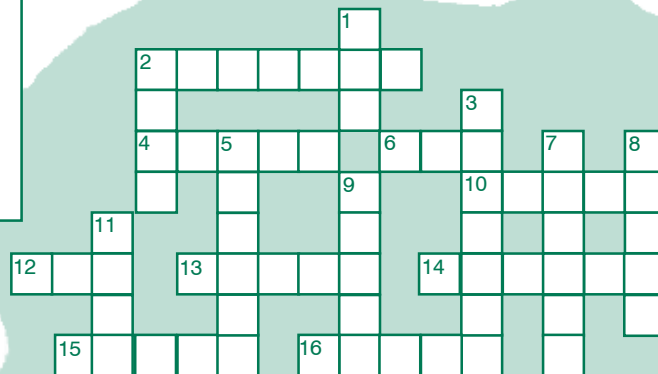
What do bears eat? Many people think bears eat mostly meat, but that's not true for black bears. Black bears eat lots of acorns, pinyon nuts, cactus fruits, berries, and other plant parts, like sotol hearts. They also eat insects and sometimes even dead animals, or carrion. The one thing they should NEVER eat is human food!

You can help Big Bend's black bears by always storing your food (and ice chests and trash) properly and by always keeping a safe distance from bears.



Fun fact

"Black Bears" are not always black. sometimes they are blondes, redheads, or brunettes. and, not every bear that is black is a "black bear.." sometimes, grizzly (brown) bears are black.









ACROSS

2. Bears sometimes eat dead animals, or _____.
4. Big Bend's bears are _____, but bears in other parks may be brown, cinnamon, or white.
6. A bear's home is called its _____. This might be in a cave or other rocky area.
10. Bears have a very good sense of _____.
12. The Spanish word for bear is _____.
13. Bears eat lots of berries and cactus _____.
14. Many people think bears come out only at night, but bears are _____ all during the day, too.
15. Bears often climb these to get food or for protection when they are scared.
16. Long, sharp _____ help bears to climb and to rip open logs to find insects to eat.

DOWN

1. A mother bear is called a _____.
2. Baby bears are called _____.
3. Black bears don't eat a lot of meat, but they do eat lots of grubs and other _____.
5. Bears eat lots of pinyon nuts and other types of nuts, like _____.
7. Bears came to Big Bend from _____, and some bears still travel back and forth from there to the park.
8. Lots of bears do this all winter long.
9. Bears often eat the juicy stalk of this plant, but first they have to rip off the long, narrow, leaves.
Hint: this plant has sharp little teeth all along its leaf edges, and it sends up a tall flowering stalk that may be 10 feet high.
11. A male bear is called a _____.

FELINE FUN!			
	MOUNTAIN LION	BOBCAT	HOUSE CAT
	Other Names	puma, cougar, panther	bob-tailed cat, wildcat
	Weight	80 - 200 lbs.	15 - 35 lbs.
	Color	tan	brown with dark spots
	Habitat	mountains and deserts	rocky areas and deserts
	Food	deer, javelina, skunks	mice, rabbits, and birds
	Babies	two, usually every other year	two each year
Interesting Facts	Their cry sounds like a woman's scream.	The tufts of black fur on their ears help them hear better.	up to six per litter several times a year
Tracks			

Cats have many things in common: they are active at night, have long whiskers to get around in the dark, and have retractable claws. These great hunters also like to chase and pounce on things. But cats also have many differences, as you can see in the chart above. Can you think of some ways your favorite cat is different from a lion or bobcat? Fill in the green squares on the chart.

Use the words below to unscramble these cat words:

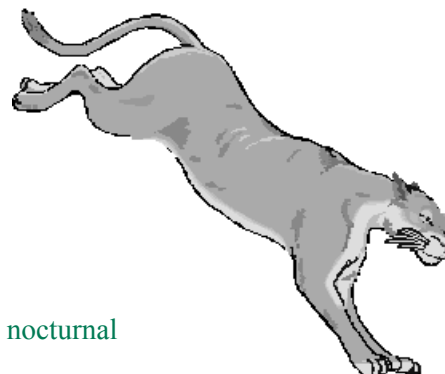
dearptro _____ slacw _____ skhsirsew _____

hrtneue _____ ulacntnor _____ tilrayos _____



Choose from:

solitary whiskers hunter claws predator nocturnal



Circle the FOUR THINGS you should do if you see a mountain lion in Big Bend:

RUN

YELL

CLIMB A TREE

THROW ROCKS

PLAY DEAD

STAY WITH AN ADULT

TELL A RANGER

FEED IT

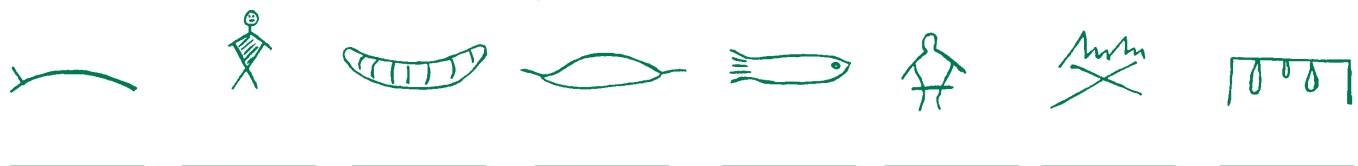
STORIES FROM THE PAST

More than 10,000 years ago, people began to live in this part of the world. These native Americans travelled across the Bering Strait, a land bridge that connected Asia and North America. As they settled in this new world, they hunted, gathered, and farmed the land. The Chisos, Jumanos, Apaches, Kiowas and Comanches all called Big Bend home at one time or another.

These early people left behind clues about their lives in the form of PICTOGRAPHS (a drawing on a rock wall) and PETROGLYPHS (a carving or inscription scratched onto a rock surface.) These works of art tell us about the events that took place when the Native Americans lived here. Today, pictographs and petroglyphs are still found in Big Bend National Park. If you see any of these drawings on rock walls, please be careful not to damage them!

We are not sure what every pictograph symbol means, but the chart shows a few used by Native Americans to tell a story or leave a message.

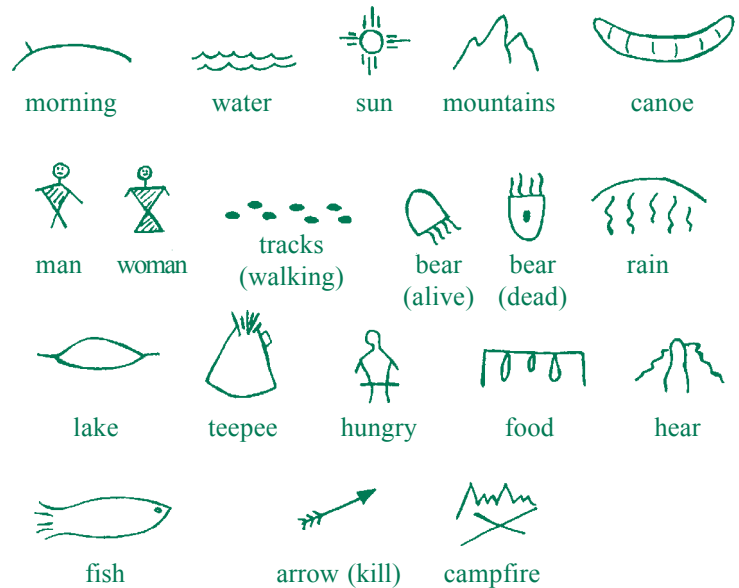
Can you figure out this Native American rock art story? Use the chart to find the meaning of each symbol, then write the story on the blank lines below the symbols.



Fun fact

in 1492, spanish explorer christopher columbus landed in the "new world," he thought he was in india—that's why he called the people he met "indians."

A FEW PICTOGRAPH SYMBOLS...



USE THIS SPACE TO WRITE YOUR OWN PICTOGRAPH STORY!



Big Bend is most famous for its incredible natural environment—the rocks, plants, and animals of the Chihuahuan Desert. The park is also known for its great recreational opportunities—hiking, backpacking, camping, rafting and birdwatching, just to name a few! But did you know that Big Bend also has some interesting history—stories of warriors and bandits, miners and soldiers, ranchers and outlaws, lost mines and buried treasure?

Fun fact

Texas schoolchildren raised money to buy land for Texas' first and biggest national park (Big Bend!) in the early 1940s.

The first European credited with exploring Big Bend was the Spanish adventurer Avar Nuñez Cabeza de Vaca, who came through here in 1535. Other Spanish explorers followed Cabeza de Vaca in their search for riches. The Spaniards set up a series of *presidios* (forts) along the Rio Grande over 200 years ago! People from Mexico also settled in this area, which was part of their country until 1848. Many of the Mexicans were farmers and ranchers. In the late 1800s, the railroad crossed West Texas and ranchers from other parts of the United States settled here. Both Mexican Americans and Anglo Americans farmed and ranched this land until the establishment of Big Bend National Park in 1944.

Camels in Big Bend ?

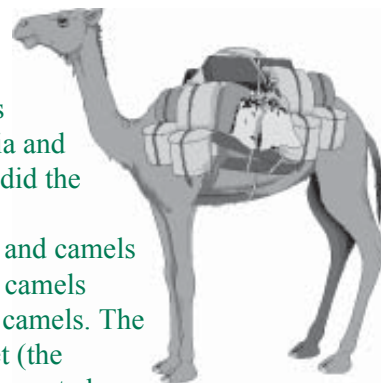
Don't camels live in the Sahara Desert? Yes, they do, but in 1859 and 1860 the U.S. Army brought camels to the Big Bend area to see if they could be used as pack animals. The camels were brought from North Africa. Three men from Arabia and two men from Turkey even came along to herd the camels for the Army. So what did the Army learn from their camel experiments in Big Bend?

Well, they found that camels can carry twice as much weight as a pack mule and camels don't eat or drink as much as a mule does. But, they also found that the mules and camels didn't get along. In fact, the mules would try to run away if they were too close to camels. The

Army also found that sharp rocks here cut the camels' feet (the camels were used to a sandy desert). The soldiers even suggested making leather "booties" for the camels.

Even though the camels had many good points, they never were used much as pack animals. After the U.S. Civil War started in 1860, the Army didn't have time for any more camel "experiments" and they continued to use pack mules instead. In the years after the Civil War, the railroads came out west and so the Army didn't need as many pack animals.

So what became of the camels? Well, a few were used in the Civil War. The camels at Fort Davis were turned loose after the war, and some wandered into Mexico. A few even ended up in circuses years later!



LEARN MORE ABOUT IT...

If you'd like to learn more about Big Bend's past, look for these titles available at park visitor centers:

- *Big Bend: A Homesteader's Story* by J.O. Langford.
- *I'll Gather My Geese* by Hallie Stillwell.
- *Tales of the Big Bend* by Elton Miles.
- *My Name is Fred Rice and I Was Born Here: The Story of a Real Cowboy in Big Bend, Texas* by Stanley Ewald.
- *Bandits, Bootleggers, and Businessmen: A History of the Big Bend, Texas 1848-1948* (VHS video tape.)

Growing Up in Big Bend

As long as people have been living here, kids have been growing up in Big Bend. There were many families who lived here before Big Bend became a national park in 1944. In fact, many of these "kids" still live in Texas, even though they aren't quite kids any more! These are just a few of the kids who grew up in Big Bend:

Julia was the daughter of Sam and Neena Nail. The Nails raised cattle at what we now call the "Old Ranch". Julia used to ride horses with her dad on the ranch, and she played with her neighbor, Patricia Wilson. (Patricia's dad, Homer, raised sheep at the Blue Creek Ranch). But, Julia also had to find time to study. She went to school in Marathon for several years, but then her parents hired a governess to teach her at home. Julia got a good education—she graduated from college and became a librarian when she grew up. Julia's governess later taught Patricia and her brothers. Can you find Julia and Patricia's ranches on your park map?

Sarah Garcia grew up at La Coyota, a small settlement west of Castolon. While her dad worked at the Terlingua Mine, Sarah went to school in Study Butte. When she wasn't in school, Sarah helped her dad on the Wilson Ranch or helped her mom with the cows, goats, chickens and farming. Sarah also liked to play with her brothers and sisters and pets (Jumbo, the donkey and Spot, the dog.) Today, Sarah's son, Tony, works for Big Bend National Park.

Fred Rice grew up at Grapevine Hills. He and his friend Ambrocia Sanchez had contests to see who was the best rock thrower! Sometimes, Fred would go visit his aunt. She raised turkeys and Fred liked to climb a hill with a turkey in his arms just to watch it fly back down! Fred and his sister Alice went to school at Dugout Wells. When Fred grew up, he became a cowboy.

Today, there are still kids growing up Big Bend National Park. The San Vicente Elementary School at Panther Junction has about 30 students in kindergarten through eighth grade. A small high school is located in Study Butte.

How would YOU like to grow up in Big Bend? What would you do for fun? How would your life be different? What do you think would be your most and least favorite parts of growing up in Big Bend?

WORD FIND

Can you find these words from Big Bend's history in the maze?



ADOBE
APACHE
ARCHEOLOGY
BUFFALO
CASTOLON
CATTLE
CAVALRY
CHISOS
COMANCHE
DUGOUT WELLS
ECOLOGY
FARMING

GLENN SPRING
GOAT
HORSE
HOT SPRINGS
JACAL
LUNA
MARISCAL
MINE
NAIL RANCH
PARK
PICTOGRAPH
RAID
RUINS
SPANIARD
TERLINGUA ABAJA
WATER
WINDMILL

What was that???

It looked like a pig, smelled like a skunk and it was covered in prickly hair!



Naturalists often carry notebooks to record things that they have seen. If you write or draw what you see, you won't forget it. You can keep a record of all the animals, plants, and places that you see. You can also keep track of other details: what were the animals doing when you saw them? what types of tracks did they leave behind? what types of plants did you see?

You may want to keep a naturalist's notebook throughout the year to record what you see. You can begin today by keeping a record of your adventures in Big Bend National Park. Use the paper below to record what you have seen and done on your trip.

Naturalist's Notebook



Junior Ranger Book Answers:

page 4 - Dynamic Deserts: some of the plant and animal adaptations needed for survival in the desert include camouflage, wax coating, spines, big ears, small leaves, leaves drop off during dry times, ability to store water, no eyelids on snakes.

You can draw any Chihuahuan Desert plant or animal on the picture!

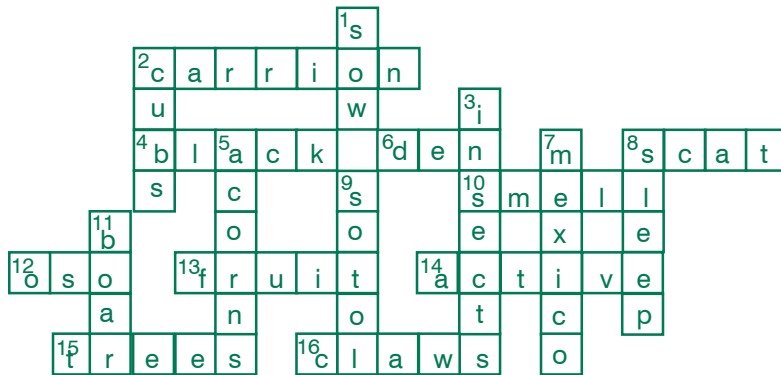
page 5 - Plant Power: Useful Plants: sotol/basket, cottonwood/house, prickly pear/jam, century plant/tequila, ocotillo/living fence, candelilla/wax, lechuguilla/rope. Prickly Pear Parts: A. roots B. areole C. spines D. fruit E. flowers F. stem.

page 6 - Dinosaurs: dinosaurs, years, scientists, models, bones, plaster, museums, broken, skeleton, time.

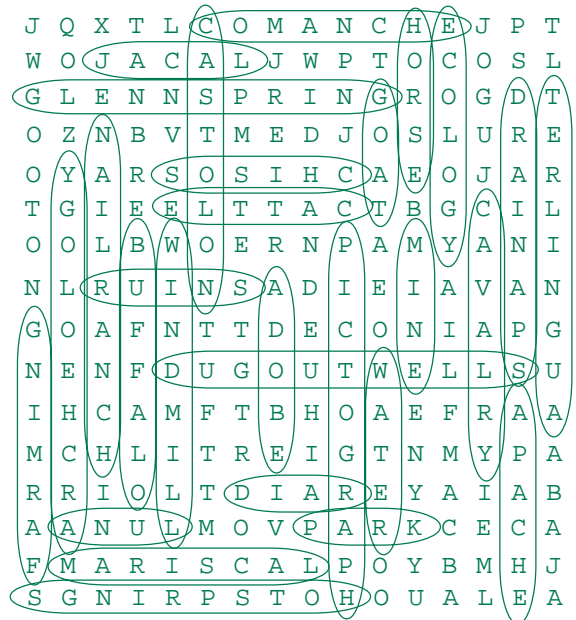
page 7 - "That's Amazing": 1.c 2.d 3.b 4.f 5.g 6.k 7.h 8.a 9.i 10.e 11.j

page 8 - What Bears Are Like: 1. legs, horse 2. tail 3. ears 4. smell, noses 5. teeth 6. claws, digging.

page 9 - Crossword Puzzle:

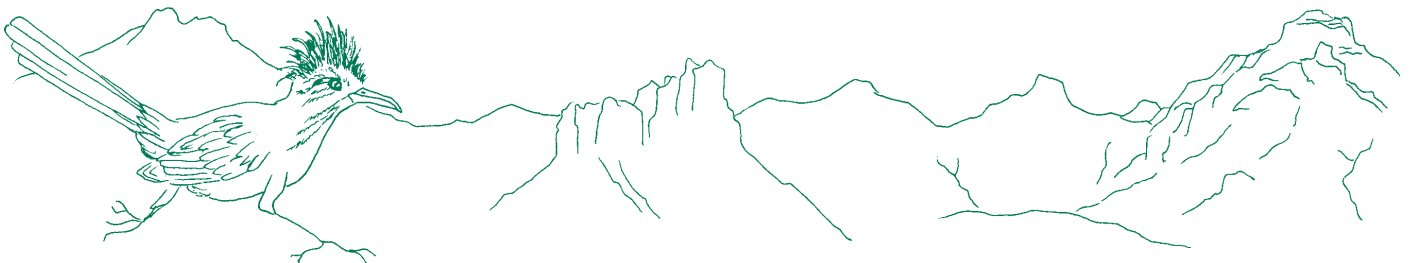


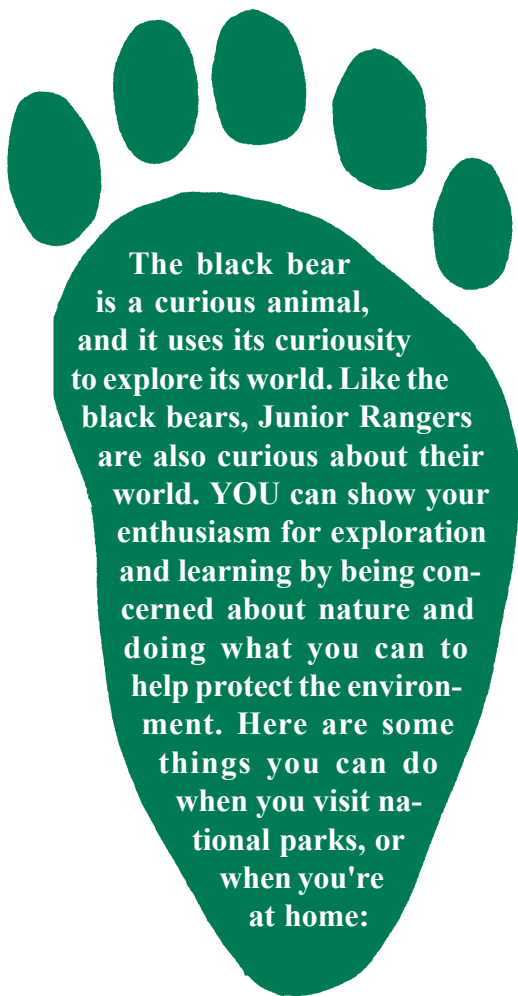
page 13 - Word Find:



page 10 - Word Scramble: predator, claws, whiskers, hunter, nocturnal, solitary. Four things you should do if you see a lion: yell, throw rocks, stay with an adult, tell a ranger. NEVER run from a lion, because it can run much faster than you! Don't climb a tree, play dead, or feed a lion either!

page 11 - Pictograph meanings: morning, man, canoe, lake, fish, hungry, campfire, food. "One morning, a man got in his canoe and went out on the lake to fish because he was hungry. He made a campfire to cook his food."





KEEP WILDLIFE WILD

Feeding wild animals is harmful to them and dangerous to you. Junior Rangers NEVER feed wild animals. Instead, they enjoy wildlife from a safe distance.

STASH YOUR TRASH

Trash belongs in a garbage can, not on the ground! Junior Rangers NEVER litter and they pick up litter that others drop. Junior Rangers also recycle whenever they can.

PLANTS AND ROCKS

Junior Rangers enjoy plants and rocks, but leave them where they are for others to enjoy, too.

SAVE RESOURCES

When you leave a room, turn off the light. Don't leave the water running when you brush your teeth or wash dishes. Turn the faucet off and use only the water you need. If you need to get somewhere that is not far away, walk or ride your bike. You get some exercise and you can enjoy the outdoors along the way!



As a Big Bend Junior Ranger, you'll need to be familiar with the park area. To become a Junior Ranger, complete the required number of activities below for your age group (see page 2). Use the official map and guide you received at the entrance station to help you find the different places in the park.



Check off the activities you completed:

- ☐ Visit one historic area in Bend Bend.
Which area did you visit? _____
- ☐ Hike a park trail. Trail: _____
- ☐ Attend a ranger program. Ranger: _____
Program: _____
- ☐ Visit the wildlife exhibit in the Chisos Basin
Visitor Center. Ranger: _____
- ☐ Take a rowboat to the Mexican village of
Santa Elena or Boquillas to experience
another culture.
- ☐ Check out the pictographs and petroglyphs
along the Hot Springs Trail.
- ☐ Walk Panther Path at the Panther Junction
Visitor Center to learn about the plants of
the Chihuahuan Desert.
- ☐ Pick up a bag of litter.

Junior Ranger Pledge

"I am proud to be a Junior Ranger! I promise to appreciate, respect and protect all national parks. I also promise to continue learning about and appreciating cultural, historic, and natural places wherever I go."

Date: _____ Signed: _____
Official Junior Ranger



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